

REMARKS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 14-28 are pending in the application, with Claim 1-13 having been cancelled and Claims 14-28 added by way of the preliminary amendment.

This application is a divisional application of Serial No. 09/961,324, filed on September 25, 2001. In an Office Action dated May 21, 2003, then pending Claims 1-14 were rejected under 35 U.S.C. § 112, second paragraph; Claims 1-5, 7, 8 and 11-13 were rejected under U.S.C. § 102(b) as being anticipated by Ireland (U.S. Patent No. 3,474,453); Claims 9 and 10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ireland; and Claims 6 and 14 were indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

New Claims 14-18 and 19-25 correspond to Claims 1-5 and 7-13, respectively, previously pending in application of Serial No. 09/961,324. No new matter is added. New Claims 27-28 have not been previously examined. Support for new Claims 27-28 is found in Applicants' originally filed specification.<sup>1</sup> No new matter is added.

During the prosecution of application Serial No. 09/961,324, the present amendment to Claim 14 (then Claim 1) was discussed in an interview between the Examiner and Applicants' representative. The interview concluded with the Examiner indicating that an amendment to Claim 1 (now Claim 14) to recite that the claimed linear element was a  $\lambda/4$  linear element would likely patentably define over Ireland, but that a further search would be required. To permit the allowable claims to quickly pass to allowance, Applicants' cancelled

all rejected claims from application Serial No. 09/961,324, choosing to further prosecute the claims discussed with the Examiner in this, a divisional application.

Regarding new Claims 27-28, Applicants submit there are numerous differences between the claimed inventions and the structure shown in FIG. 6 of the Ireland. Specifically, Ireland teaches a continuity between metal conductor 31 and cavity 53. In comparison, there is no continuity between Applicants' claimed elements that correspond to metal conductor 31 and cavity 53 of Ireland. More specifically, in Ireland cavity 53 is connected to half-wave element 11 by point 59, as shown in FIG. 7. Although FIG. 7 does not show it, it is clearly inferred from FIG. 6 that cavity 53 and half-wave element 11 are connected, with metal conductor 31 intervened therebetween. Therefore, in Ireland metal conductor 31 and cavity 53 are electrically connected. However, in the present invention, as is clear from FIG. 1(C), FIG. 2(B), and FIG. 5(B), the claimed metal conductor is separated from the cavity, and there is not electrical continuity between them.

Therefore, Applicants new Claims 27-28 recite the linear element is "arranged so as not to be electrically connected to said cavity." Applicants submit that this feature is at least one patentable difference between the teachings of Ireland and the claimed invention because, if Applicants' linear element is electrically connected to the cavity, the antenna will not function. This is because the antenna of the present invention operates by a capacitance held between the cavity and the linear element. If Applicants' linear element and the cavity are electrically connected, there will be no capacitance between them, and the antenna will not work. Similarly, the half-wave element and the conductor piece of the claimed invention also cannot be connected to the cavity.

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<sup>1</sup> Specification, disclosure for Figures 1-7.

Applicants' Claim 28 also recites the limitation of "a ground terminal of the feeding point is connected to the cavity." In Ireland, if the cavity is connected to the ground terminal of the feeding point, the antenna of Ireland will be shorted and will not work. Ireland teaches a structure in which a capacitance formed by a cavity is loaded in series between the feeding point and the half-wave element. In this structure, if the cavity *is connected* to the ground terminal, the feeding point is short-circuited to the ground terminal through the cavity, and thereby Ireland's antenna does not work. In contrast, in the antenna of the present invention, if the cavity *is not connected* to the ground terminal of the feeding point, no capacitance is generated between the conductor piece and the ground terminal, and Applicants' antenna will not work. In other words, in the antenna of Ireland, a potential difference can be applied between the cavity (which is connected to the feeding line) and the half-wave element. Thus a capacitance is generated therebetween, as shown in Ireland's FIG. 8. In contrast, with the configuration of Applicants' claimed invention, a potential difference can be applied between the conductor piece (which is connected to the feeding line) and the cavity connected to the ground terminal of the feeding point. Thus, in Applicants' claimed invention a capacitance can be generated therebetween, as shown in FIG. 2C, thereby improving performance.

The structures recited in Applicants' Claims 27-28 (as well as Claim 14) provide numerous advantages over the conventional art to include the suppression of unnecessary current flowing on the cavity. This suppression exists because a current feedback path is formed between the capacitance and the feeding point as shown in FIG. 2C, thus current leakage to other portions of the cavity is suppressed. The structure of Ireland does not produce such a suppression effect.

For at least the reasons stated above, Applicants therefore submit Ireland does not disclose or suggest all the elements of independent Claims 14 and 27-28. Therefore, Applicants submit the inventions defined by Claims 14 and 27-28, and all claims depending

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therefrom, are not rendered obvious by the asserted prior art for at least the reasons stated above.<sup>2</sup>

Accordingly, in view of the present amendment and in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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<sup>2</sup> MPEP § 2142 "...the prior art reference (or references when combined) must teach or suggest **all** the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."